

**CITY OF KIRKLAND**

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**DEPARTMENT OF PUBLIC WORKS  
PRE-APPROVED PLANS POLICY**

**Policy D-10:        ADDENDUM TO THE 2016 KING COUNTY  
                             SURFACE WATER DESIGN MANUAL**

This addendum to the 2016 King County Surface Water Design Manual (KCSWDM) applies to development and redevelopment proposals within the City of Kirkland. This Addendum includes minor revisions to the KCSWDM to address the differences between King County's and the City's organization and processes. No major substantive changes have been made to the KCSWDM in order to maintain equivalency in review requirements and level of protection provided by the manual. It is our intent to maintain equivalency with the 2012 Ecology Stormwater Management Manual for Western WA.

The 2016 KCSWDM and the attached Addendum were adopted by Council in November 2016 with an effective date of January 1, 2017. All subsequent KC addendums to the 2016 KCSWDM are assumed to be adopted unless otherwise stated.



# **Addendum to the 2016 King County Surface Water Design Manual**

Effective date: January 1, 2017

## Introduction

This addendum to the 2016 King County Surface Water Design Manual (KCSWDM) applies to development and redevelopment proposals within the City of Kirkland. The KCSWDM has adopted requirements of the Clean Water Act, the Endangered Species Act, and the State Growth Management Act. This addendum includes minor revisions to the KCSWDM to address the differences between King County's and the City's organization and processes. No major substantive changes have been made to the KCSWDM in order to maintain equivalency in review requirements and level of protection provided by the manual. It is the City of Kirkland's intent to maintain equivalency with the 2012 Ecology Stormwater Management Manual for Western WA, as amended in 2014 (Ecology Manual).

## Addendum Organization

The information presented in this addendum is organized as follows:

**I. Terminology:** At times King County and the City of Kirkland use different terminology to describe or to refer to equivalent subject matter. This section identifies these terms and the City of Kirkland's equivalent terminology.

**II. Key Revisions:** This section specifically identifies the minor revisions the City has made to the KCSWDM.

**III. Code Reference Tables:** King County code is referenced in many places throughout the KCSWDM. This section identifies these county code references and states the equivalent city code where applicable.

**IV. Mapping:** The City of Kirkland equivalents to the Flow Control Applications map, Landslide Hazard Drainage Areas map, and Sensitive/Critical Areas map are available online at:

[http://www.kirklandwa.gov/depart/Information\\_Technology/GIS.htm](http://www.kirklandwa.gov/depart/Information_Technology/GIS.htm)

**V. Reference Materials:** This section identifies which reference materials provided in the KCSWDM are applicable and which are not. It also identifies equivalent City of Kirkland reference materials available.

**Note:** Clarifications and interpretations to the KCSWDM or this addendum are documented and made available through City Regulatory Code and the Public Works Pre-Approved Plans.

## I. Terminology

At times King County and the City of Kirkland use different terminology to describe or to refer to equivalent subject matter. This section identifies these terms and the City of Kirkland's equivalent terminology.

- **Critical Drainage Area (CDA).** This definition does not apply in the City of Kirkland.
- **Department of Permitting and Environmental Review (DPER).** All references to DPER conducting drainage reviews or determinations shall refer to City of Kirkland Development Services.
- **Department of Natural Resources and Parks (DNRP).** All references to DNRP shall refer to City of Kirkland Parks, Planning and Community Development and/or Public Works Departments.
- **Director.** All references to the Director shall refer to the City of Kirkland Public Works Director.
- **King County.** All references to King County shall refer to the City of Kirkland (COK).
- **King County Code (KCC).** All references to the KCC shall refer to the City of Kirkland Municipal Code (KMC). Check code reference table for equivalent code sections.
- **King County Designated/Identified Water Quality Problem.** This determination is made on a case-by-case basis in the City of Kirkland.
- **King County Road Standards.** All references to the King County Road Standards shall refer to the City of Kirkland Public Works Pre-Approved Plans.
- **Overflow Pipe:** A pipe shall be considered an overflow if sufficient storage is provided below the invert of the pipe to meet flow control BMP requirements. In these situations, the flow control BMP will be allowed the credit associated with the BMP. Per the new impervious surface definition in the 2016 KCSWDM, if the pipe is used as an underdrain, the area will be counted as new or replaced impervious surface area.
- **Project Size.** The project size is based on the parcel(s) and/or right-of-way included in the project scope. It will be assumed the area disturbed by development will encompass the entire parcel(s) and right-of-way, unless there is an easement, defined stream/wetland and buffer, NGPE, or other condition which limits the amount of developable area.
- **Sensitive Area Folio.** Refer to City of Kirkland Sensitive Areas Map at: [http://www.kirklandwa.gov/depart/Information\\_Technology/GIS.htm](http://www.kirklandwa.gov/depart/Information_Technology/GIS.htm)
- **Water and Land Resources (WLR) Division.** All references to the WLR Division shall refer to the City of Kirkland Surface Water Management Group.
- **Zoning Classifications: Where the KCSWDM references Agricultural (A) Zoning, Forest (F) Zoning, or Rural (R) Zoning.** These zoning classifications are intended for areas outside of the Urban Growth Boundary, therefore the City of Kirkland contains no equivalent zoning. Refer to city zoning maps to determine which zoning classifications apply to your project. The City of Kirkland Land Use Map can be found at: [http://www.kirklandwa.gov/depart/Information\\_Technology/GIS.htm](http://www.kirklandwa.gov/depart/Information_Technology/GIS.htm)

## **II. Key Revisions**

This section includes minor revisions and clarifications to the 2016 KCSWDM to address the differences between King County's and the City of Kirkland's organization and processes, as well as to ensure equivalency with the 2014 Ecology Manual. Unless specifically noted as a clarification, the items below are minor revisions.

### **Chapter 1: Drainage Review and Requirements**

Applies with the revisions stated below:

If a project uses multi-family zoning and density, then multi-family stormwater requirements apply to the entire project even if the project includes detached single family homes.

#### **1.1 Drainage Review**

Criteria for review levels are defined in the COK Public Works Pre-Approved Plans, Policies D-2 and D-3. Drainage review levels used in the City of Kirkland are listed below:

- Basic drainage review
- Simplified drainage review
- Targeted drainage review
- Full drainage review

When determining the level of drainage review, the following items apply:

- Clarification: Areas that change from existing gravel to paved surface will be counted as new impervious surface area, not replaced impervious area.
- Clarification: Flow control BMPs cannot be used to reduce the level of drainage review, but can be used to reduce the amount of flow control required. For example, proposed driveways and roads will always be counted as fully impervious for the drainage review level, but permeable pavement can be used to meet flow control requirements.

#### **1.2 Core Requirements**

##### **1.2.2 Core Requirement #2: Offsite Analysis**

###### **1.2.2.1 Downstream Analysis**

Exclude the section titled Downstream Water Quality Problems Requiring Special Attention. Water quality problems in the City of Kirkland are addressed through educational programs and source control.

###### **1.2.2.1.1 Downstream Drainage Problems Requiring Special Attention**

For item 4, Potential Impacts to Wetland Hydrology problem, refer to COK Public Works Pre-Approved Plans, Policy D-13, to determine the level of review needed for the wetland, reporting information required, and potential modelling to determine impacts.

##### **1.2.3 Core Requirement #3: Flow Control**

Clarification: Historic (forested) conditions will be used for pre-developed runoff modeling of all projects in Level 2 flow control areas.

A City of Kirkland flow control map is located at:

[http://www.kirklandwa.gov/depart/Information\\_Technology/GIS.htm](http://www.kirklandwa.gov/depart/Information_Technology/GIS.htm)

The City will accept non-infiltrating bioretention (planter boxes) for Basic Flow Control (Level 1), provided the design meets the criteria set forth in the City of Seattle Stormwater Manual, Volume 3, Section 5.8.2). The hydraulic restriction layer for planters shall be made of concrete. The planters shall contain plants from the Seattle Green Factor Plant List.

Projects triggering a Full Project Drainage Review proposing infiltration/bioretention facilities or pervious pavement to meet Level 1 or 2 flow control or for onsite flow control BMPs require a soils report per COK Pre-Approved Plans, Policy D-8.

#### **1.2.3.1 Area-Specific Flow Control Facility Requirement**

Regarding Exceptions to Flow Control Requirements in both Basic (#1) and Conservation (#2) Flow Control Areas, flow control can be waived if a project generates less than a 0.15 cfs increase in 100-yr peak flows using a 15-minute time step. The intent to still allow the 0.10 cfs increase at the 100-yr peak flow with a 1-hour time step were for areas that do not include a 15-minute time step in the approved model. All areas in Kirkland have a 15-minute time step, and therefore must use 15-minute time step for the exception.

Clarification: Only BMPs listed on Table 1.2.9.A (page 1-95) can be used on a project to meet the 0.15 cfs limit unless otherwise approved through the adjustment process, Policy D-11. For example, products like infiltrator chambers are not equivalent to gravel filled infiltration trenches in Appendix C and shall submit an adjustment to the manual per Policy D-11 in the COK Public Works Pre-Approved Plans to show equivalence.

Clarification: To meet the requirements of the 0.15 cfs exception, total pre-developed and post-developed areas must match.

Clarification: Regarding Target Surfaces in Conservation Flow Control Areas to be mitigated, vegetated areas in easements and/or tracts must be modeled from forested in the pre-developed condition to lawn in the developed condition, unless the area is placed in a tract or easement that will preserve the native vegetation during and after construction.

Clarification: Threshold and modeling calculations of pervious and impervious areas, turf areas, including lawn or synthetic turf, that do not have an underdrain are considered 100% pervious. Areas that have an underdrain are considered 100% impervious.

#### **1.2.4 Core Requirement #4: Conveyance System**

##### **1.2.4.3 Conveyance System Implementation Requirements**

##### **G. Spill Control**

City of Kirkland will only require spill control requirements on commercial and multifamily projects that do not require flow control. Single family residential will install a tee/turn down elbow per (COK D.13).

#### **1.2.6 Core Requirement #6: Maintenance and Operations**

Refer to KMC 15.52.070 for City Acceptance of new drainage facilities.

If the project proposes a propriety system not covered in the 2016 KCSWDM, the applicant shall submit an adjustment to the manual per Policy D-11 in the COK Public

Works Pre-Approved Plans. The adjustment should include inspection and maintenance standards, including frequency of inspections and a log of maintenance activity.

### **1.2.7 Core Requirement #7: Financial Guarantees and Liability**

This section is replaced by KMC 15.52.080, Bonds.

### **1.2.8 Core Requirement #8: Water Quality**

#### **1.2.8.1 A. Basic WQ Treatment Areas**

Reductions of water quality treatment level from Enhanced to Basic, Exception #4, is not allowed in the City of Kirkland. Projects in Kirkland cannot reduce the level of required water quality treatment by prohibiting the use of leachable metals on the property.

For a bioretention to meet enhanced basic water quality treatment, it must be designed, using an approved continuous runoff model, to infiltrate 91% of the influent runoff, consistent with the 2014 Ecology Manual, and designed with no underdrain and designed per 2014 Ecology Manual BMP T7.30.

The City will accept all water quality treatment facility-types identified in the 2014 Ecology Manual, with the following additions and alterations:

- Emerging technologies will be considered on a case-by-case basis, via adjustment process, Policy D-11 in the COK Public Works Pre-Approved Plans, provided the product has received a level of use designation from WA State Dept. of Ecology (see the following website):

<http://www.ecy.wa.gov/programs/wq/stormwater/newtech/index.html>

#### **1.2.8.1 B. Sensitive Lake WQ Treatment Areas**

This section does not apply to the City of Kirkland.

#### **1.2.8.1 C. Sphagnum Bog WQ Treatment Areas**

This section does not apply to the City of Kirkland.

### **1.2.9 Core Requirement #9: Flow Control BMPs**

#### **1.2.9.1 Flow Control BMP Requirements Overview**

##### **A. Target Surfaces**

If a project or threshold discharge area of a project meets the Direct Discharge Exemption per Section 1.2.3.1, soil amendment is required for new pervious areas and flow control BMPs need to be evaluated in the following order for impervious areas:

1. Full Infiltration
2. Basic Dispersion

If basic dispersion is found to be a feasible BMP, limited infiltration, bioretention and/or permeable pavement may be used instead of basic dispersion to meet the flow control BMP requirement. If basic dispersion is found to be infeasible, perforated pipe connection is not required in the City and the flow control BMP requirement is considered met.

#### **1.2.9.2 Individual Lot BMP Requirements**

To meet Requirement #3, mitigating impervious surface to the maximum extent feasible, in the public right-of-way for both Small Lot BMP Requirements and

Large Lot BMP Requirements, the BMPs must be evaluated in the following order for:

Sidewalk (that is a target surface):

1. Bioretention
2. Pervious Concrete
3. Limited Infiltration

Road Widening (that is a target surface):

1. Bioretention
2. Porous Concrete Parking Strip (if applicable)
3. Limited Infiltration
4. Porous Asphalt

Requirement #5, implementation of Reduced Impervious Surface Credit and Native Growth Retention Credit, for both Small Lot BMP Requirements and Large Lot BMP Requirements is not required in the City of Kirkland. King County has high lot coverage so the reduction of 10% lot coverage to meet the flow control BMP requirement is achievable. The City of Kirkland justifies meeting this requirement for implementation with an already lower lot coverage than King County (typically 70% lot coverage in King County compared to 50% lot coverage in Kirkland).

Requirement #7, installation of perforated pipe connection, is not required in the City of Kirkland. If the applicant has reached this level, it is viewed that LID is infeasible on the site and do not want to introduce additional water into the ground.

#### **1.2.9.2.3 Large Rural Lot BMP Requirements**

This section does not apply to the City of Kirkland.

#### **1.2.9.4.1 Use of Credit by Subdivision Projects**

A. Subdivision Implementation of BMPs within Road Right-of-Way Item #3: If the road right-of-way will be maintained by the City of Kirkland, the flow control BMPs must be approved by the public works department. Refer to section 1.2.9.2, Requirement #3, in the Addendum for the order of BMP evaluation in the right-of-way.

#### **1.3.1 Special Requirement #1: Other Adopted Area-Specific Requirements**

Projects located in the Holmes Point Area must also comply with lot coverage and other standards included in the Kirkland Zoning Code, *Chapter 70 – Holmes Point Overlay Zone*.

#### **1.3.3 Special Requirement #3: Flood Protection Facilities**

This section does not apply to the City of Kirkland.

### **1.4 Adjustment Process**

Refer to the Surface Water Adjustment Process defined in COK Public Works Pre-Approved Plans, Policy D-11.

## **Chapter 2 Drainage Plan Submittal**



Applies with the revisions stated below:

## **2.1 Plans Required for Drainage Review**

Refer to the COK Public Works Pre-Approved Plans, Policies G-7, D-2, and D-3.

## **2.2 Plans Required with Initial Permit**

Refer to the COK Public Works Pre-Approved Plans, Policies G-7, D-2, and D-3.

## **2.3 Drainage Review Plan Specifications**

### **2.3.1.1 Technical Information Report**

An Operation and Maintenance Manual is required for all privately maintained stormwater detention and water quality facilities, and is submitted as part of the permit application.

### **2.3.1.2 – Site Improvement Plan**

Refer to the COK Public Works Pre-Approved Plans, Policies G-7, D-2, and D-3.

### **2.3.1.3 – ESC Plan Section**

Refer to the COK Public Works Pre-Approved Plans, Policies G-7, D-2, and D-3.

### **2.3.1.4 – Stormwater Pollution Prevention and Spill (SWPPS) Plan**

Refer to the COK Public Works Pre-Approved Plans, Policies G-7, D-12.

### **2.3.2 – Projects in Targeted Drainage Review (TDR)**

Refer to the COK Public Works Pre-Approved Plans, Policies G-7, D-2, and D-3.

## **2.4 Plans Required After Drainage Review (pg 2-35)**

Refer to the COK Public Works Pre-Approved Plans, policies G-7, D-2, and D-3.

## **Chapter 3 Hydrologic Analysis & Design**

Applies with the revisions stated below:

### **3.2.2.1 Generating Time Series**

#### **Calculation of Impervious Area**

For residential development, the assumed impervious coverage shall be the maximum impervious coverage permitted by zoning code, typically 50% lot coverage except for the Holmes Point Overlay Zone (not automatically 4,000sf as in the 2016KCSWDM).

The assumed impervious can only be less if a covenant, sensitive area, or native growth protection easement exists.

If an existing house will remain during redevelopment, the following two options are available to address the storm drainage from that house/lot:

1. Evaluate the proposed lot as new/replaced impervious area at the required lot coverage as part of the subdivision drainage technical information report, OR
2. Remove the lot from calculations as non-targeted surfaces. If this method is taken, the existing home cannot be demolished and redeveloped within 5 years of the recording of the short plat. If the home is demolished and redeveloped within that time period, a storm drainage analysis must be provided for the entire subdivision including the lot at full lot coverage as part of the building permit. The following note must be included on the subdivision:

*Redevelopment of Lot\_: Since the home currently constructed on the existing parcel that is proposed to remain as Lot\_ has not been evaluated as part of the storm drainage analysis, the existing home cannot be demolished and redeveloped within 5 years of the recording of this plat. If the home is demolished and redeveloped within that time period, a storm drainage analysis must be provided for the entire subdivision including Lot\_ at full impervious coverage.*

### **3.3.2 Flow Control Design Using the Runoff File Method Evaluating Flow Control Performance**

Clarification: If having difficulties meeting the lower part of the duration curve (50% of the 2-year to the 2-year), refer to footnote 10 in the 2016 KCSWDM.

## **Chapter 5 Flow Control Design**

Applies with the revisions stated below:

### **5.2.1 General Requirements for Infiltration Facilities Testing Procedure**

In addition to the small and large PIT, EPA falling head percolation test (follow test procedure in 2016 KCSWDM, Reference 6-A) is an acceptable testing procedure for determining a design infiltration rate. The correction factor for determining the design infiltration rate is  $F(\text{testing}) = 0.30$ . Refer to the table below for what type of infiltration test is acceptable for meeting the LID Performance Standard or for designing infiltration facilities.

A large PIT will be required for infiltration facilities that will infiltrate more than 1 acre of impervious area

### **Allowable Infiltration Testing Methods**

|  | Small<br>PIT | Large<br>PIT | Single Ring<br>Infiltrometer | EPA Falling<br>Head |
|--|--------------|--------------|------------------------------|---------------------|
| LID Performance<br>Standard                            | Accepted     | Accepted     | Accepted                     | Accepted            |
| Inf Facility serving <<br>1 acre of<br>impervious area | Accepted     | Accepted     | Not Accepted                 | Accepted            |
| Inf Facility serving ><br>1 acre of<br>impervious area | Not Accepted | Accepted     | Not Accepted                 | Not Accepted        |

The single ring infiltrometer and EPA falling head test will require a minimum of 3 tests (arrayed in a triangle) per infiltration BMP or facility location. The lowest measured rate shall be used in determining the design infiltration rate.

NOTE: Grain size analysis is not an allowable method for determining an infiltration rate for the LID Performance Standard and infiltration facility sizing.

### **5.1 Detention Facilities**

Use details located in the COK Public Works Pre-Approved Plans, if available.

#### **5.1.4.1 Control Structures Design Criteria**

A removable screen is required when the bottom orifice size is 1" or less. The screen shall be made from stainless steel mesh, 8 inch depth, and attached with a minimum of 3 stainless steel screws. The size of the mesh openings must be less than the orifice diameter (0.25 inch mesh typical).

#### **5.1.5 Parking Lot Detention**

Parking lot detention is not allowed in the City of Kirkland.

### **Chapter 6 Water Quality Design**

Applies with the revisions stated below:

Use details located in the COK Public Works Pre-Approved Plans, if available.

#### **6.1.2 Enhanced Basic Water Quality Menu**

For a bioretention to meet enhanced basic water quality treatment, it must be designed, using an approved continuous runoff model, (WWHM 2012 or MGS Flood) to infiltrate 91% of the influent runoff without an underdrain and per Ecology Manual BMP T7.30.

### **Appendix A: Maintenance Requirements for Flow Control, Conveyance, and Water Quality Facilities**

If the project proposes a propriety system not covered in the 2016 KCSWDM, the applicant shall submit and adjustment to the manual per Policy D-11 in the COK Public Works Pre-Approved Plans. The adjustment should include inspection and maintenance standards, including frequency of inspections and a log of maintenance activity.

### **Appendix B: Master Drainage Plan Objective, Criteria and Components, and Review Process**

This Appendix does not apply to projects in the City of Kirkland.

### **Appendix C: Small project Drainage Requirements**

Applies with the revisions stated below:

#### **C.1.3 Application of Flow Control BMPs**

For any soil investigation or reporting information, refer to COK Public Works Pre-Approved Plans, Policy D-8.

#### **C.2.2.3 Use of Gravel Filled Trenches for Full Infiltration**

Products like infiltrator chambers are not equivalent to gravel filled infiltration trenches in Appendix C. If the project would like to use proprietary items, the applicant shall submit an adjustment to the manual per Policy D-11 in the COK Public Works Pre-Approved Plans.

#### **C.2.7.4 Permeable Pavers**

Sand is not allowed in between or below permeable pavers in the City of Kirkland. No. 8 Aggregate shall be used in openings between pavers, and in the bedding course.

#### **C.2.7.6 Grassed Modular Grid Pavement**

Modular grid pavement with grass planted in the openings or in a thin layer of soil over the grid material cannot be used for single family residential driveways that are used on a daily basis in the City of Kirkland. Past performance shows the grass does not grow well when subject to vehicular traffic on a daily basis.

#### **C.2.10 Native Growth Retention Credit**

For additional implementation requirements of this BMP, refer to COK Public Works Pre-Approved Plans, Policy D-15.

### **Appendix D: Construction Stormwater Pollution Prevention Standards**

Use details located in the COK Public Works Pre-Approved Plans, if available.

#### **D.2.4.2 Wet Season Requirements**

Refer to ESC Notes in the COK Public Works Pre-Approved Plans.

### **III. Code Reference Tables**

King County Code is referenced in many places throughout the KCSWDM. The following table identifies the county code references and states the equivalent City of Kirkland code where applicable (Kirkland Municipal Code is KMC and Kirkland Zoning Code is KZC). Policies are located in the Public Works (PW) Pre-Approved Plans.

| <b>King County Code Reference</b> | <b>Subject of Reference</b>                           | <b>COK Code/Policy Equivalent</b>                     | <b>Comment</b>        |
|-----------------------------------|---|---|-----------------------|
| KCC 2.98                          | Adoption procedures and Critical Drainage Areas       | KZC Chapter 90  |                       |
| Title 9                           | Surface Water Management                              | KMC 15.52   |                       |
| KCC 9.04                          | Surface Water Run-off policy                          | KMC 15.52   |                       |
| KCC 9.04.020                      | Definitions   | KMC 15.04   |                       |
| KCC 9.04.030                      | Drainage Review                                       | PW Pre-Approved Plans                                 | Policy D-2, D-3       |
| KCC 9.04.050                      | Drainage Review-requirements                          | PW Pre-Approved Plans                                 | Policy D-2, D-3       |
| KCC 9.04.060                      | Critical drainage and/or erosion areas                | KZC 85, KZC 90  |                       |
| KCC 9.04.070                      | Engineering plans for the purposes of drainage review | KMC 15.52.050, KMC15.52.060 and PW Pre-Approved Plans | Policy D-2, D-3, D-11 |
| KCC 9.04.090                      | Construction timing and final approval                | KMC 15.52.060   | Policy D-12           |
| KCC 9.04.095                      | Vesting for lots in final short plats                 | KMC 22.20.370   |                       |
| KCC 9.04.100                      | Liability Requirements                                | KMC 15.52.080   |                       |
| KCC 9.04.115                      | Drainage Facilities accepted by King County           | KMC 15.52.070   |                       |
| KCC 9.04.120                      | Drainage Facilities NOT accepted by King County       | KMC 15.52.070   |                       |
| KCC 9.12.025                      | Prohibited discharges in the water quality section    | KMC 15.52.090   | Policy D-4            |
| KCC 9.12                          | Water Quality   | KMC 15.52.090 – 15.52.110                             |                       |
| KCC 9.12.035                      | Water Quality: Stormwater                             | KMC, 15.52.090, KMC                                   | Policy D-4            |

|                  |  |                                    |   |
|------------------|--|------------------------------------|---|
|                  | Pollution Prevention Manual Adoption                                 | 15.52.100                          |   |
| KCC 16.82        | Erosion and Sediment Control, Clearing and Grading                   | KMC 15.52.060                      |   |
| KCC 16.82.095(A) | ESC standards: seasonal limitation period                            | PW Pre-Approved Plans              | Erosion/Sediment Control Plan Notes       |
| KCC 16.82.100(F) | Grading standards: preservation of duff layer                        | KZC Chapter 95                     |   |
| KCC 16.82.100(G) | Grading Standards: soil amendments                                   | KZC Chapter 95, Pre-approved Plans |   |
| KCC 16.82.150    | Clearing standards in rural zone                                     | Not applicable                     | COK does not contain rural zones          |
| KCC 20.70.020    | Critical Aquifer recharge area                                       | Not applicable                     | No critical aquifer recharge areas in COK |
| KCC 21A.24       | Critical Areas Requirements  | KZC Chapters 85 and 90             |   |
| KCC 21A.14.180.D | On-site recreation space required                                    | No equivalent City code exists     | On-site recreation space is not required  |
| KCC 21A.24       | Critical Areas Code  | KZC Chapter 90                     |   |
| KCC 21A.38       | Property specific development standards or special district overlays | KZC Chapter 70, KZC Chapter 90     |   |
| KCC 23.20        | Code compliance: citations   | KMC 1.12.030                       |   |
| KCC 23.24        | Code compliance: notice and orders                                   | KMC 1.12.040                       |   |
| KCC 23.28        | Code compliance: stop work orders                                    | KMC 1.12.070                       |   |
| KCC 23.40        | Code compliance: liens references on declaration of covenants form   | KMC Title 15                       |   |

## IV. Mapping

Below is a list of City of Kirkland maps to be used during drainage design. The maps can be viewed on-line or viewed at the Public Works counter at City Hall. The maps are available on the following website:

[http://www.kirklandwa.gov/depart/Information\\_Technology/GIS.htm](http://www.kirklandwa.gov/depart/Information_Technology/GIS.htm)

1. Base Map
2. Flow Control Map
3. Sensitive Areas Map
4. Land Use Map

## V. Reference Materials

This section identifies which reference materials provided in the 2016 KCSWDM are applicable and which are not. Reference materials that have been struck through (i.e., ~~struck through~~) are not applicable to projects in the City of Kirkland.

- ~~1. KCC 9.04 — Surface Water Runoff Policy~~
- ~~2. Adopted Critical Drainage Areas~~
- ~~3. Other Adopted Area Specific Drainage Requirements~~

- ~~A. RA Zone Clearing Restrictions~~
- 4. Other Drainage Related Regulations and Guidelines
  - A Grading Code Soil Amendment Standard
  - B Clearing & Grading Seasonal Limitations
  - C Landscape Management Plan Guidelines
  - ~~D Shared Facility Maintenance Responsibility Guidance~~
- 5. Wetland Hydrology Protection Guidelines
- 6. Hydrologic/Hydraulic Design Methods
  - A Infiltration Rate Test Methods
  - B Pond Geometry Equations
  - C Introduction to Level Pool Routing
  - D Supplemental Modeling Guidelines
- 7. Engineering Plan Support
  - ~~A King County Standard Map Symbols~~
  - ~~B Standard Plan Notes and Example Construction Sequence~~
  - ~~C Stormfilter Facility Access and Cartridge Configuration~~
- 8. Forms and Worksheets
  - A Technical Information Report (TIR) Worksheet
  - B Offsite Analysis Drainage System Table
  - C Water Quality Facility Sizing Worksheets
  - D Flow Control and Water Quality Facility Summary Sheet and Sketch
  - E CSWPP Worksheet Forms
  - ~~F Adjustment Application Form and Process Guidelines~~
  - ~~G Dedication and Indemnification Clause—Final Recording~~
  - ~~H Bond Quantities Worksheet~~
  - ~~I Maintenance and Defect Agreement~~
  - ~~J Drainage Facility Covenant~~
  - ~~K Drainage Release Covenant~~
  - ~~L Drainage Easement~~
  - ~~M Flow Control BMP Covenant and BMP Maintenance Instructions (Recordable format)~~
  - ~~N Impervious Surface Limit Covenant~~
  - ~~O Clearing Limit Covenant~~
  - ~~P River Protection Easement~~
  - ~~Q Leachable Metals Covenant~~
- 9. Interim Changes to Requirements
  - ~~A Blanket Adjustments~~
  - ~~B Administrative Changes~~
- 10. King County Identified Water Quality Problems
- 11. Materials
  - ~~A (VACANT)~~
  - ~~B (VACANT)~~
  - C Bioretention Soil Media Standard Specifications
  - ~~D (VACANT)~~
  - E Roofing Erodible or Leachable Materials
- ~~12. (VACANT)~~
- ~~13. (VACANT)~~
- 14. Supplemental Approved Facilities
  - A Approved Proprietary Facilities
  - B Approved Public Domain Facilities